



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,627	01/13/2004	Rene Gerrit Heideman	145-001US	2466
22897	7590	04/28/2006	EXAMINER	
DEMONT & BREYER, LLC SUITE 250 100 COMMONS WAY HOLMDEL, NJ 07733			PAK, SUNG H	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 04/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/756,627	HEIDEMAN ET AL.	
	Examiner	Art Unit	
	Sung H. Pak	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 February 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 10-15 and 29-31 is/are allowed.
- 6) Claim(s) 1-9, 16-28 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/21/2006 has been entered.

Response to Arguments

Applicant's amendment filed 2/21/2006 has been carefully considered by the examiner. Applicant's arguments regarding the patentability of the claimed invention recited in claims 10-15, 29-31 are convincing. Therefore, claims 10-15, 29-31 are hereby allowed.

However, applicant's arguments regarding the patentability of claims 1-9, 16-29 are not convincing and the previous ground of rejection is maintained by the examiner.

Starting on page 11 of the applicant's "Remarks", it is argued that the reliance on Temkin reference as disclosing the "composite guiding region" of the claimed limitation is "inconsistent with applicant's definition..." (page 11, paragraph 2 of Remarks).

The examiner respectfully submits that "during patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). MPEP 2111.

HOWEVER, it is important NOT to read limitations of the specification INTO the claim. MPEP 2111 states:

Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550- 51 (CCPA 1969) (Claim 9 was directed to a process of analyzing data generated by mass spectrographic analysis of a gas. The process comprised selecting the data to be analyzed by subjecting the data to a mathematical manipulation. The examiner made rejections under 35 U.S.C. 101 and 102. In the 35 U.S.C. 102 rejection, the examiner explained that the claim was anticipated by a mental process augmented by pencil and paper markings. The court agreed that the claim was not limited to using a machine to carry out the process since the claim did not explicitly set forth the machine. The court explained that “reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from reading limitations of the specification into a claim,’ to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim.” The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.). See also In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997).

(emphasis added)

Further, MPEP 2111.01 states:

See also Superguide Corp. v. DirecTV Enterprises, Inc., 358 F.3d 870, 875, 69 USPQ2d 1865, 1868 (Fed. Cir. 2004) (“Though understanding the claim language may be aided by explanations contained in the written description, it is important not to import into a claim limitations that are not part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.”)

(emphasis added)

In the instant application, the “composite guiding region” recited in the claim does not have a special definition in the specification. Instead, the specification discloses plurality of embodiments in which the “composite guiding region” may comprise. (for example, compare

paragraphs 0032-0033). On page 11, applicant refers to paragraphs 0034 and 0036 as containing the special definition of the “composite guiding region,” however these paragraphs merely disclose **particular embodiments** of the claimed invention and the particular features of such disclosure **may not be read into a claim.**

In addition, the claim merely recites “composite guiding region” without any particulars of the structure that constitute “composite guiding region.” In the optical waveguide art, the “guiding region” is understood by the ordinary skilled artisan as region around the light guiding portion of the optical waveguide, which would include optical cores as well as claddings that are immediately adjacent to the optical core material. Therefore, claimed limitations of the instant application as they are currently recited are fully anticipated by the disclosure of Temkin et al.

Starting on page 15 of the applicant’s response, it is argued that Temkin et al.’s device uses a particular doped layers and “[u]sing stoichiometric cladding layers would do little to control stress and birefringence in the composite guiding region.” (page 15, last paragraph)

The examiner respectfully submits that (as discussed in the previous office action), Temkin et al reference discloses the use of plurality of waveguide layers containing silicon base material, some of which may contain dopants. (see also page 3 of the Office Action mailed 1/3/2006) Further, the use of stoichiometric silicon nitride and silicon dioxide materials are well known and common in the optical waveguide art. As explained in the Office Action mailed 1/3/2006, stoichiometric silicon nitride material and silicon dioxide materials provide well known advantages in the art. As such, one of ordinary skill in the art, at the time the invention was made would be motivated to modify the device of Temkin to have stoichiometric silicon

nitride and silicon dioxide material in order to attain the advantage well known by using such materials.

Further, the examiner respectfully submits that mere arguments of applicant's council is not sufficient rebuttal for rebutting the prima facie case of obviousness. MPEP 2145: Consideration of Applicant's Rebuttal Arguments states:

Attorney argument is not evidence unless it is an admission, in which case, an examiner may use the admission in making a rejection.... The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997)

See also, subsections I through X under MPEP 2145.

As such it is respectfully submitted that claims 5, 19-20 are rendered obvious in view of Temkin et al. as discussed in the previous office action.

Starting on page 16, it is argued that "no one skilled in the art would be motivated to apply such teachings to a passive waveguide to control intrinsic birefringence" (page 16, last two paragraphs).

The examiner respectfully submits that as discussed in the previous Office Action, Caneau et al. discloses every limitations of the independent claim, except for a single limitation drawn to a step of removing a portion of the waveguide layer material. In accordance with MPEP 2143, the previous Office Action clearly established a prima facie case of obviousness of claimed limitations over Caneau et al. in view of Parhami et al. That is, the previous office action clearly established: 1) motivation why one of ordinary skill in the art would incorporate the teaching of Parhami; 2) reasonable expectation of success (i.e. there is nothing in either

Caneau or Parhami that would teach away from the modification); and 3) that both Caneau and Parhami, when combine, would teach all the claimed limitations in the instant application.

While applicant's list structures and features disclosed in Parhami that are different from the structures and features disclosed by the present application, that does not rebut the prima facie case of obviousness of the claimed invention. Mere assertion that no one in the art would be motivated to apply the teaching is not convincing. See also above discussions regarding MPEP 2145.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 6-9, 16-18, 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Temkin et al (US 6,580,864 B1).

Temkin reference discloses an optical device with all the limitations set forth in the claims, including: a composite guiding region having at least three layers, lower and upper cladding layers have stress of the same sign (tensile- column 5 lines 43-52); said lower and upper cladding layers are separated by one or more core layer, which has stress of opposite sign (compressive

strain- column 5 lines 43-52); said core layer is suitable for guiding light based on refractive indices of the layers (column 5 lines 10-13);

wherein the lower and upper clad layers and core layer are conformal layers (Fig. 1);

wherein the magnitude of the stress is substantially equal (column 5 lines 52-56);

wherein the core layer is borosilicate glass (Figs. 1-2);

wherein the core layer is silicon dioxide (abstract).

Although Temkin does not explicitly state that the waveguide structure contains an electro-optic element, such element is inherently anticipated since it is to be used in WDM application as a planar lightwave circuit (column 1 lines 35-48).

Tempkin also discloses a method of forming such waveguide structure by depositing conformal layers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Temkin et al (US 6,580,864 B1).

Temkin reference discloses an optical device with limitations set forth in the claims as discussed above, except it does not explicitly teach the use of stoichiometric silicon nitride and silicon dioxide as cladding or core layers of the optical waveguide.

However, the use of stoichiometric silicon nitride and silicon dioxide materials as core and cladding layers is well known and common in the semiconductor optical waveguide art. Such materials are advantageously used because they provide low loss optical waveguides with enhanced light confinement for efficient optical transmission. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Temkin to have stoichiometric silicon nitride and silicon dioxide layers.

Claims 16, 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caneau et al (US 5,732,179) in view of Parhami et al (US 6,704,487 B2).

Caneau discloses: a surface waveguide comprising a lower and upper cladding having lower and upper cladding materials which have refractive index lower than refractive index of core material (column 6 lines 11-19); a core comprising an inner core and an outer core (2 layers), wherein the inner comprises inner core material, supports propagation of light, and has a first stress (tensile or compressive); outercore surrounding (in planar configuration) and

comprising outer core material having a second stress (tensile or compressive) of opposite sign relative to the first stress (column 9 lines 33-60);

wherein one or more physical attributes of said inner core material and outer core material, which physical attributes are selected from the group consisting of inner core thickness, outer core layer thickness, inner core stress level, outer core stress level, and type of material, are combined to provide a modal birefringence of zero (column 9 lines 46-60);

wherein said lower and upper cladding materials and core materials are selected from group consisting of silicon (column 6 lines 20-30).

Caneau reference discloses an optical device with limitations set forth in the claims as discussed above, except it does not explicitly teach the steps of removing portions of waveguide layer materials as claimed.

On the other hand, Parhami explicitly teaches the steps of removing portions of waveguide layer materials and forming trenches in fabricating waveguide structure with low birefringence (abstract). Such feature is considered advantageous and desirable because it provides additional relief from internal stress of the waveguiding layers and lowers undesired birefringence. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Caneau to have portions of waveguiding layers removed as taught by Parhami.

Allowable Subject Matter

Claims 10-15, 29-31 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:
none of the prior art fairly teaches or suggests a surface waveguide (i.e. planar waveguide)
having layers with the stress/ strain characteristics *as claimed* in the instant application, wherein
the surface waveguide has an inner core and an outer core, wherein the inner core is surrounded
by the outer core. (That is, the outer core extends and covers all 4 sides of the inner core.)

Caneau et al. (US 5,732,179) is the closest prior art that discloses alternating stress/strain
layers disposed in the core region. However, Caneau merely discloses a sandwiched core layers
in a planar configuration, and does NOT disclose inner core being surrounded by outer core
layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The
examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Rodney Bovernick can be reached on (571)272-2344. The fax phone number for the
organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak
Primary Patent Examiner
Art Unit 2874